

# Fiberglassing Fins Tip-to-Tip

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**Procedure for Fiberglassing Fins Tip-to-Tip**

<b>Materials</b>	<p>(1) Large sheet of 10oz. fiberglass and one large sheet of 3 oz. fiberglass</p> <p>(1) Laminating Epoxy</p> <ul style="list-style-type: none"> <li>• Aeropoxy (available at Giant Leap Rocketry)</li> <li>• West Systems (available at West Marine)</li> <li>• B. Smith Finish Cure Epoxy (available at many hobby shops).</li> </ul> <p>(1) Disposable Foam Finishing Roller (3" Long)</p> <p>(1) Disposable Plastic Roller Tray or Deep Plastic Plate</p> <p>(1) Disposable Epoxy mixing cup, Black magic marker, and Stirring stick</p> <p>(1) ¼" - ½" thick dowel which is 6" longer than the fin root edge</p> <p>(1) Pair of Vinyl or Nitrile gloves (keep 2 or 3 extra pairs handy – In my experience, Nitrile works best)</p> <p>(1) Rocket holding rack that keeps rocket lying on its side with fins exposed</p> <p>(1) Bright light for visibility and (1) Fan for air circulation</p> <p>(1) Drop Cloth or Newspaper to cover floor and work table</p> <p>(1) Strong Utility scissors</p> <p>(1) Finishing Sander and 100-Grit sandpaper and (1) sheet of 80-Grit paper</p> <p>(1) Roll of paper towel</p> <p>(1) Garbage bag kept within reach and wide-open for epoxy-covered waste</p>
<b>Step 1:</b>	<p>Prepare area with a drop cloth and rocket on its side, resting firmly in a rack so that the fins are exposed but supported when pressure is applied to them.</p> <p>If rocket is too light to sit still when you press on the fins, tape a piece of lead inside the top end of the body tube, so the rocket is heavier but can be turned.</p> <p>Also, the fins should be roughed-up with 80-Grit sand paper.</p>
<b>Step 2:</b>	<p>Measure and cut 3 or 4 sheets (same number of sheets as number of fins) of 10 Oz. fiberglass so that it goes from about 1 inch above the fins and 1 inch beyond tip-to-tip of the fins (See conceptual drawing below).</p> <p>If you plan to do two layers of fiberglass, cut both sets of sheets now. For example, you should lay a base of 10 oz. glass and then lay a sheet of 3 oz.</p>

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	<p>glass on top to make the surface smooth for finishing. General consensus is that more than two layers of glass is unnecessary – too heavy.</p> <p>Before cutting, press the fiberglass sheet flat against the body tube and into the fin-body-tube connection joints.</p> <div data-bbox="470 577 1023 934" style="text-align: center;"> <p>The diagram illustrates the assembly of a rocket fin. A central green rectangular block is labeled 'Body Tube'. Two light blue trapezoidal shapes are attached to the sides of the body tube, labeled 'Fins'. A light purple trapezoidal shape is overlaid on the fins and extends slightly beyond their edges, labeled 'Fiberglass sheet (1" over edges)'. Arrows point from the text labels to the corresponding parts in the diagram.</p> </div>
<p><b>Step 3:</b></p>	<p>Prepare your epoxy mixing cup by marking it on the side with a magic marker for fill spots related to the epoxy ratios.</p> <p>For example, Aeropoxy uses a 3:1 ratio, so you would mark fill-lines on the side of the cup at 1 oz and at 4 oz.</p>
<p><b>Step 4:</b></p>	<p>Lay out your extra gloves, paper towel, dowel, foam roller, rolling tray and fiberglass. Ensure you have everything within reach and adequate lighting and airflow. Put on your gloves and ensure your garbage bag is accessible.</p>
<p><b>Step 5:</b></p>	<p>Mix your epoxy and pour about 2 - 3 oz. into the rolling tray.</p> <p>Lay one sheet of fiberglass on the fins as in the drawing above.</p>
<p><b>Step 6:</b></p>	<p>Wet the foam roller with epoxy and start from the center of the fiberglass sheet, rolling out towards the ends of the fins. Wet them completely with epoxy until the fiberglass becomes translucent. Try to wet the fiberglass 1-inch beyond the edge of the fins &amp; body tube.</p> <p>Use the dowel and/or your gloved fingers to press the wet fiberglass into the fin-body-tube joints. This is critical. Try to get the fiberglass fully pressed against every surface smoothly with <i>no air pockets</i>.</p> <p>Use paper towels to keep your gloves clean. Don't hesitate to change gloves</p>

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	if the ones you're wearing are too gooped up with epoxy.
<b>Step 7:</b>	Turn the rocket and repeat for all the fins.
<b>Step 8:</b>  <b>Read this step completely before starting</b>	<p>Now, apply the second layer of lighter-weight fiberglass. It is more difficult to get the second sheet to lay flat. The ¼" – ½" dowel will be needed.</p> <p>First, using your gloved fingers, hold the 3 oz. sheet like a taco, with its edges between your fingers, touching each other, and its center hanging over the body tube at the center-point between the fins. Rest it on the body tube and use the dowel to press the sheet into place <u>from its center to its edges</u>. Try to keep the edges of the sheet from touching the fins until you set the sheet tightly into the fin-body-tube joints.</p> <p>Work it with the dowel and your fingers until it sits smoothly on all surfaces. Air bubbles can develop at the fin-body-tube joints, and can be avoided by starting from the center of the sheet and pressing it out to the edges.</p> <p>Now, (refill the tray with epoxy if needed) wet the roller again and spread epoxy as with first sheet, continuing to press out air bubbles. Use less epoxy on the second sheet than on the first.</p>
<b>Step 9:</b>	<p>When finished, place the wet assembly in a hot room – 90° F or higher is best. (Bob Smith WILL NOT CURE BELOW 70° F).</p> <p>During the first hour, turn the rocket every 5-10 minutes, 1/3 or 1/4 turn (based on number of fins), so that the epoxy doesn't drip to one area.</p> <p>After the first hour with turning, let the Epoxy cure overnight.</p>
<b>Step 10:</b>	Your fins will now look something like this:

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<b>Step 11:</b>	Cut off the extra fiberglass right down to the hard, dry edge. The more you cut off, the less you have to sand off with your finishing sander...
<b>Step 12</b>	<p>This step should be done outdoors, but must be in a place where a lot of fiberglass dust is not a problem. <b><u>You MUST wear:</u></b> a dust mask and long sleeves tucked into nitrile gloves. <b><u>Fiberglass dust is nasty stuff.</u></b></p> <p>Using a Finishing-Sander and 100-Grit sandpaper, grind off the extra fiberglass and smooth the fin faces, the body tube faces, and all the corners and edges.</p> <p>Final sand all epoxied / glassed surfaces with 150-Grit.</p> <p>After this step, micro-shreds of fiberglass (hard to see) will be impregnated in your shirt and pants. Remove and brush your shoes before entering your home. Wash them immediately alone in the washing machine.</p>
<b>Step 15:</b>	<p>To prep for painting, clean the surface with a wet rag. After they dry, fill all edges, rough surfaces, gaps and breaks with Elmer's Wood Filler or Bondo Filling Compound. <b><u>Note:</u></b> use Bondo only in a <b><u>VERY WELL</u></b> ventilated area (I use Bondo <b><u>only</u></b> outdoors with a fan blowing directly on it to vent it away from my face – it's <b><u>dangerous stuff!</u></b>). Also, I mix 1-4 tablespoons of water into Elmer's Filler to make it easier to spread.</p> <p>Be aware that Elmers Wood Filler shrinks as it dries. Wood Filler and Bondo may require two or three applications with 3 or more hours of drying time and sanding with 150-Grit.</p>
<b>Step 16:</b>	For painting, apply two or three coats of a "high solid" "filling" primer paint,

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	<p>such as Kilz© brush-on. Although it is available in a spray can, brush-on will be heavier and thicker.</p> <p>If you use Kilz spray, make very light coats and wait 15 minutes between each coat. If you apply the spray paint too thickly in each coat, micro-bubbles will appear when you sand the dried, sprayed-on paint.</p> <p>Coat as needed to create a smooth surface for pigmented paint. Sand between priming coats with 150 – 220 grit.</p>
<b>Step 17:</b>	Before applying pigmented paint, apply a single coat over the Kilz of primer made by the same manufacturer as the pigmented paint to ensure proper interaction with your pigmented paint.